UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/750,673	01/02/2001	Soeren Moritz	Q59736	8001

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EXAMINER
FERRIS III, FRED O

ART UNIT	PAPER NUMBER
2123	

DATE MAILED: 06/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

	Application No.	Applicant(s)
Office Action Summary	09/750,673	MORITZ ET AL.
	Examiner	Art Unit
	Fred Ferris	2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *2 April 2003* .

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>26 April 2001</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .

4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____ .

DETAILED ACTION

1.   *Claims 1-26 have been presented for examination based on applicant's*

arguments filed on 3 April 2003. Claims 1-26 remain rejected by the examiner.

Response to Arguments

2.   *Applicant's arguments filed on 3 April 2003 have been fully considered but they*

are not persuasive.

        Regarding applicant's response to 112(1) rejections: Applicants have argued that

independent claims 1, 13, and 25 gain enablement for the claimed **evaluation and**

control unit *for* **comparing component information data with real picture data** *via*

the text contained on pages 15, line 19 through 18, line 20 of the specification. The

examiner respectfully disagrees. For example, page 16, line 5 recites; "The evaluation-

and-control-unit 5 converts the information contained in the source 201 of the image

memory 20 into a prepared source 51. However, the specification never sufficiently

discloses how this is accomplished. The text beginning on page 16, line 7 attempts to

describe the process but does not disclose the following:

How is the **geometric assignment** *54 used to describe which* **geometric elements** *of*

a component 61 could be matched with the geometric elements for a **source**

assignment *52?*

How is the geometry assigned?

What geometry is assigned?

What are the geometric elements??

On page 18 reference is made to either the pixels 202 or the CAD elements 205

being converted into geometric elements (e.g., point 55, line 56, curve 57) which are

used by the evaluation-and-control-unit in assigning the selected components but never

discloses how the <u>conversion or the assignment</u> is performed.

Accordingly, the examiner assets that one skilled in the art would be at odds to

*determine how to make and/or use the claimed invention <u>without **undue***</u>

*<u>**experimentation**</u>.*

The examiner maintains the 112(1) rejections.

<u>Regarding applicant's response to 103(a) rejections</u>: Applicants are reminded

that In the previous office action the examiner made the following statement on page 4

of paper #7.

"<u>While the specification for the claimed invention is delinquent in the areas cited</u>

<u>above (see 112(1) rejections), the examiner has made prior art rejections based on the</u>

*<u>**limited scope** of the information contained in the specification.</u>"*

In response to applicant's arguments against the references individually, one

cannot show nonobviousness by attacking references individually where the rejections

are based on combinations of references. See In re Keller, 642 F.2d 413, 208

USPQ 871 (CCPA 1981); In re Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir.

1986). It is noted that appellant's arguments regarding prior art have essentially only

recited the prior art teaching followed by a recitation of the claims **without pointing out the patentable distinction between the claimed invention and the prior art**.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., **an image recording system** (page 5, line 8), **functional interplay between objects** (page 9, line16) compared with the **behavior of a virtual model** (page 9, line 17)) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, **limitations from the specification are not read into the claims**. See In re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Applicants have also argued "**exemplary**" embodiments of prior art. Such arguments are not considered.

In response to applicant's arguments, the recitation "**generating the virtual image of a real installation**" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See In re Hirao, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and Kropa v. Robie, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention

where there is some teaching, suggestion, or motivation to do so found either in the

references themselves or in the knowledge generally available to one of ordinary skill in

the art. See In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and In re

Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, prior art (Marks)

provides sufficient motivation as cited under 103(a) rejections. (see Marks CL1-L42,

L60)

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3.   ***Claims 1-12 are rejected under 35 U.S.C. 112, first paragraph, as containing***

subject matter which was not described in the specification in such a way as to

enable one skilled in the art to which it pertains, or with which it is most nearly

connected, to make and/or use the invention.

*Specifically, in independent claim 1 applicant's are claiming an **evaluation and***

***control unit** for comparing component information data with real picture data but the*

specification does not disclose an <u>algorithm or technique</u> for comparing component

*information data with real picture data. Neither the operation of the **evaluation and***

***control** unit, nor the process of **identifying components in picture data**, nor the*

*claimed **deriving hypotheses,** is sufficiently described in the specification to allow one*

skilled in the art <u>to make and/or use the invention</u>.

While page 4, line 5 of the specification state that the evaluation and control unit controls the process of generating the virtual installation model and controls an "automatic function" (page 5, line 13), it does not sufficiently describe functional operation either the process or the "automatic function". Obviously, one skilled in the art would not be able to create an "automatic function" without specific details on how the automatic function operates. Merely stating that the evaluation and control unit "processes component data" (page 8, line 8) and "performs image analysis" (page 8, line 20) does not provide a sufficient description to allow one skilled in the art to make and/or use the invention. Dependent claims inherit these defects.

Claims 13-26 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for "generating picture data" and "storage to store", does not reasonably provide enablement for "comparing picture data to identify installation components" (claim 13) or "a processing unit to compare components". The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

Specifically, independent claim 13 claims **comparing picture data to identify installation components** within the picture data but again the specification does not disclose an algorithm or technique for performing the comparison or identifying the components.

*Independent claim 25 claims a **processing unit to compare components** but*

does not disclose the <u>process for comparing components</u> sufficient to allow one skilled

in the art to make and/or use the invention.

Dependent claims inherit these defects.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. ***Claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over***

U.S. Patent 6,025,847 issued to Marks in view of U.S. Patent 6,477,266 issued to

Asar in further view of U.S. Patent 5,552,984 issued to Crandall et al.

While the specification for the claimed invention is delinquent in the areas cited

above (see 112(1) rejections), the examiner has made prior art rejections based on the

limited scope of the information contained in the specification.

Independent claim 1 is drawn to:

Generating an **image of installation model** by:
Memory (1st) for storing **picture data**
Memory (2nd) for storing **component information**
Memory (3rd) for storing **virtual installation model**
Evaluation and control unit for comparing component information data with real picture data
Identifying components in **picture data** as **installation components**
Deriving a hypotheses for identified components in picture data
Generating respective **installation components** in **virtual installation model**

Regarding independent claim 1: Marks teaches a system and method of

generating a 3D **(virtual) model** from an **image (picture)** using a computer system.

The image is of an arrangement of physical objects (components) where primitives

(geometric) representing a portion of a physical object (a component) in the image are

specified as a set of parameters that correspond locations in the **image model**. Marks

further discloses incorporating a memory space for storing picture data, component

(object) information. (Abstract, Summary of Invention, Figs. 1-7, CL3-L2-10, CL4-L45,

CL7-L35-67, CL7-L5-50)

Marks does not explicitly teach comparing component information data with real

picture data.

Asar teaches a system and method for identifying components by **comparing**

component information data with **real picture data** and incorporating multiple

memories for storing picture data and component information. Asar further discloses

evaluating (deriving a hypotheses via the image control system) identified components

in the picture data by determining defects and placement errors and generating a

respective image of the **installation of components**. (Abstract, Summary of Invention,

Figs. 9-25, CL3-L29-43, CL5-L12-25, CL6-L10-35)

Marks mentions, but further does not explicitly teach *virtual components (installation)*.

*Crandall teaches generating a **virtual model** of a **real system** using **virtual components** (installation components) from a library of components representing the total **virtual system** (installation). (Abstract, Summary of Invention, Figs. 1a&b, 9, CL2-L5-11, CL4-L1-29)*

*It would have obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Marks relating to a system and method for generating a 3D **(virtual) model** from an **image (picture)**, with the teachings of Asar relating to identifying components by **comparing component information data** with **real picture data**, and to further modify the teachings of Marks with the teachings of Crandall relating to generating a **virtual model** of a **real system** using **virtual components** (installation components) from a library of components representing the total **virtual system** (installation), to realize a device and method for generating a virtual model of an installation. An obvious motivation exists since, as referenced by prior art, creating a 3D (virtual) model of physical objects provides more efficient detection of discrepancies between the model and the actual image.*

*Regarding dependent claims 2-4: Asar performs image analysis on picture data as previously cited above. (CL2-L5-11) Crandall teaches using **virtual components** (installation components) from a library of components representing the total **virtual system** (installation) (CL2-L5-11). Marks teaches objects being located by geometric*

information and multiple window views of picture data and 3D (virtual) model views.

(CL4-L10-25, Figs. 2-7)

> *Regarding dependent claims 5-9: Marks discloses building a 3D (virtual) model*

using the well-known techniques of "dropping", "clicking and dragging", and "rubber

banding" in the manipulation of primitives based on geometric information (CL4-L42).

Marks also teaches the evaluation of structural components (by function) to assign

primitives (add components) in a 3d (virtual) installation model. (Figs. 9-25, CL3-L29-43,

CL5-L12-25, CL6-L10-35)

> *Regarding dependent claims 10-12: Marks teaches the "automatic" component*

location (CL7-42) and a system incorporating a digital camera, digitized photographs

(picture data), and a CAD system with memory and a multiple perspective view display.

(Abstract, Summary of Invention, Figs. 1-7, CL3-L2-10, CL4-L45, CL7-L35-67, CL7-L5-

50)

Independent claim 13 is drawn to:

Generating an **image of real installation model** by:
Generating **picture data**
comparing component information data with picture data
Identifying components in **picture data** as **installation components**

> *Regarding independent claim 13: As previously cited, Marks teaches a system*

*and method of generating a 3D **(virtual) model** from an **image (picture)** using a*

computer system. The image is of an arrangement of physical objects (components)

where primitives (geometric) representing a portion of a physical object (a component)

in the image are specified as a set of parameters that correspond locations in the

image model. (Abstract, Summary of Invention, Figs. 1-7, CL3-L2-10, CL4-L45, CL7-

L35-67, CL7-L5-50)

Marks does not explicitly teach comparing component information data with real

picture data. _

Asar teaches a system and method for identifying components by comparing

component information data with real picture data and incorporating multiple

memories for storing picture data and component information. Asar further discloses

evaluating (deriving a hypotheses via the image control system) identified components

in the picture data by determining defects and placement errors and generating a

respective image of the installation of components. (Abstract, Summary of Invention,

Figs. 9-25, CL3-L29-43, CL5-L12-25, CL6-L10-35)

Marks mentions, but further does not explicitly teach virtual components

(installation).

Crandall teaches generating a virtual model of a real system using virtual

components (installation components) from a library of components representing the

total virtual system (installation). (Abstract, Summary of Invention, Figs. 1a&b, 9, CL2-

L5-11, CL4-L1-29)

It would have been obvious to one of ordinary skill in the art at the time the

claimed invention was made to modify the teachings of Marks relating to a system and

method for generating a 3D (virtual) model from an image (picture), with the

teachings of Asar relating to identifying components by comparing component

information data with *real picture data*, and to further modify the teachings of Marks

with the teachings of Crandall relating to generating a *virtual model* of a *real system*

using *virtual components* (installation components) from a library of components

representing the total *virtual system* (installation), to realize a device and method for

generating a virtual model of an installation. An obvious motivation exists since, as

referenced by prior art, creating a 3D (virtual) model of physical objects provides more

efficient detection of discrepancies between the model and the actual image.

<u>Regarding dependent claims 14-16</u>: As also previously cited, Asar teaches image

analysis on picture data as previously cited above. (CL2-L5-11) Crandall teaches using

virtual components (installation components) from a *library of components*

representing the total *virtual system* (installation) (CL2-L5-11) Marks teaches the

manipulation of primitives based on geometric information (CL4-L42) and multiple

window views of picture data and 3D (virtual) model views. (CL4-L10-25, Figs. 2-7).

<u>Regarding dependent claims 17-24</u>: Marks discloses building a 3D (virtual) model

using the well-known techniques of "dropping", "clicking and dragging", and "rubber

banding" in the manipulation (matching) of primitives based on **geometric information**

(CL4-L42). Marks also teaches the **evaluation** of structural components (by function)

to assign primitives (add components) in a 3d (virtual) installation model. (Figs. 9-25,

CL3-L29-43, CL5-L12-25, CL6-L10-35) It further would have been obvious, and

necessary, to "select" and "drag" installation components since all modern GUI based

CAD system operate in this manner. Marks further teaches "automatic" component

location (CL7-42) and a system incorporating a digital camera, digitized photographs

(picture data), and a CAD system with memory and a multiple perspective view display.

(Abstract, Summary of Invention, Figs. 1-7, CL3-L2-10, CL4-L45, CL7-L35-67, CL7-L5-

50)

Regarding claims 25 and 26: *Claims 25 and 26 merely claim the virtual model of*

a facility that includes the same limitations as disclosed in claims 1-24. Claims 25 and

26 are therefore rejected using the same reasoning as previously cited above.

Conclusion

5.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure, careful consideration should be given prior to applicant's

response to this Office Action.

U.S. Patent 5,988,862 issued Kacyra et al teaches component modeling from picture data.

U.S. Patent 5,894,310 issued to Arsenault et al teaches virtual modeling of systems.

U.S. Patent 5,812,394 issued to Lewis et al teaches virtual components and installation.

U.S. Patent 4,937,768 issued to Carver et al teaches virtual system modeling.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred Ferris whose telephone number is 703-305-9670 and whose normal working hours are 8:30am to 5:00pm Monday to Friday.

Any inquiry of a general nature relating to the status of this application should be directed to the group receptionist whose telephone number is 703-305-3900.

The Official Fax Numbers are:

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